

**CLAIMS**

What is claimed is:

- 1           1.     A high temperature rigid fiber board formed by a process  
2 comprising the steps of:  
3           providing a fibrous material, the fibrous material including  
4 alumina silica fiber, soluble fiber, mineral wool or a combination  
5 thereof;  
6           performing fiberization;  
7           forming a fibrous mat;  
8           accumulating layers of built-up fibrous mat;  
9           heating and pressing the fibrous mat to achieve a desired  
10 thickness thereof; and  
11          drying the fibrous mat to form a fibrous high temperature  
12 pressed board product.
- 1           2.     The fiber board formed by a process in accordance with  
2 claim 1, the process further comprising the step of: adding a filler  
3 material.
- 1           3.     The fiber board formed by a process in accordance with  
2 claim 1, the process further comprising the step of: adding  
3 dry/granular binder.
- 1           4.     The fiber board formed by a process in accordance with  
2 claim 2, the process further comprising the step of: adding  
3 dry/granular binder.
- 1           5.     The fiber board formed by the process of claim 3, further  
2 comprising the step of adding the binder just after the fiberization  
3 step and before the formation of the fibrous mat.

1           6.     The fiberboard formed by the process of claim 3, further  
2     comprising the step of adding the binder at the fiberization step and  
3     before the formation of the fibrous mat.

1           7.     The fiberboard formed by the process of claim 3, further  
2     comprising the step of adding water to dissolve the binder.

1           8.     The fiberboard formed by the process of claim 7, wherein  
2     the water is applied just prior to the hot pressing step.

1           9.     The fiberboard formed by the process of claim 7, wherein  
2     the water is added in the form of encapsulated moisture in the same  
3     vicinity the binder is added.

1           10.    A fibrous board comprising a body of fibers adhered  
2     together.

1           11.    The fibrous board of claim 10, wherein the fiber is selected  
2     from the group consisting of alumina silica fiber, soluble fiber, mineral  
3     wool or any combination of thereof.

1           12.    The fibrous board of claim 10, comprising a body of  
2     refractory ceramic fiber and mineral wool adhered to the refractory  
3     ceramic fiber.

1           13.    The fibrous board of claim 11, wherein the ceramic fiber  
2     and mineral wool are adhered by at least one binder.

1           14.    The fibrous board of claim 13, wherein the at least one  
2     binder is an inorganic binder.

1           15.    The fibrous board of claim 14, wherein the inorganic  
2     binder is selected from the group consisting powder or granular

3 potassium silicate, sodium silicate or other silicate materials, or  
4 phosphate or phosphate based materials and combinations thereof.

1        16. The fibrous board of claim 15, further comprising at least  
2 one filler material selected from the group consisting of clays,  
3 cements, perlite or vermiculite and combinations thereof.

1        17. The fibrous board of claim 13, further comprising at least  
2 one filler material selected from the group consisting of clays,  
3 cements, perlite or vermiculite and combinations thereof.

1            18.    The fibrous board of claim 15, wherein the fiber weight  
2   percent is about 70-98%, the weight percent of binder is 2-20%, and  
3   the weight percent of filler is 0-15%.

1        19.    The fibrous board of claim 18, wherein the board is greater  
2    than 50% inorganic.

1           20.    The fibrous board of claim 19, wherein the board is greater  
2   than 75% inorganic.

1            21.    The fibrous board of claim 20, wherein the board is greater  
2    than 85% inorganic.

1            22.    The fibrous board of claim 21, wherein the board is greater  
2    than 99% inorganic.

1           23. The fibrous board of claim 18, which exhibits no off  
2 gassing.

1            24.     The fibrous board of claim 10, wherein the binder is added  
2     into the process as, or just after, the fiber is being produced or as the  
3     mat or fleece is being developed.

1        25. The fiberboard formed by the process of claim 8, wherein  
2 water spray is added to the top and bottom surfaces at a rate of 10-  
3 30% of fiber basis weight on each of the two surfaces.

1        26. The fiberboard formed by the process of claim 25, wherein  
2 the water further comprises wetting agents to improve water  
3 penetration into the fiber mat.

1        27. The fiberboard of claim 25, wherein the density and  
2 thickness is determined by being subjected to a hot press at a  
3 temperature sufficient to produce steam and for a period of time  
4 sufficient to dry or nearly dry the board. Typical temperatures are  
5 350°F-600°F.

1        28. A process comprising a fiber board incorporating fiber,  
2 binder(s), fillers, and using a process wherein the binders are added at  
3 or just after a point of fiberization and before formation of a fibrous  
4 mat from which the boards are produced in a continuous manner,  
5 whereby accumulating wheels of layers of built up fibrous mat of  
6 desired thickness is pressed and dried into high temperature fiber  
7 boards.

1        29. A process comprising a fiber board incorporating fiber,  
2 binder(s), fillers, and using a process wherein the binders are added at  
3 or just after a point of fiberization and before formation of a fibrous  
4 mat from which the boards are produced in a continuous manner,  
5 whereby accumulating wheels of layers of continuous mat of desired  
6 thickness is pressed and dried into high temperature fiber boards.

1        30. A process comprising a fiber board, free of fillers,  
2 incorporating fiber, binder(s) and using a process wherein the binders

3 are added at or just after a point of fiberization and before formation  
4 of a fibrous mat from which the boards are produced in a batch  
5 manner, whereby accumulating wheels of layers of built up fibrous mat  
6 of desired thickness is pressed and dried into high temperature fiber  
7 boards.

1 31. A process comprising a fiber board incorporating fiber,  
2 binder(s), fillers, and using a process wherein the binders are added at  
3 or just after a point of fiberization and before formation of a fibrous  
4 mat from which the boards are produced in a batch manner, whereby  
5 accumulating wheels of layers of continuous mat of desired thickness  
6 is pressed and dried into high temperature fiber boards.

1 32. A pressed ceramic fiber board comprising a ceramic  
2 fiber, an inorganic binder and a filler.

1 33. A pressed ceramic fiber board comprising about 70-98%  
2 weight percent of alumina silica fiber, soluble fiber, mineral wool or  
3 any combination of thereof, about 2-20% of powder or granular  
4 potassium silicate, sodium silicate or other silicate materials, or  
5 phosphate or phosphate based materials and combinations thereof,  
6 and about 0-15% of clay, cement, perlite, or vermiculite and  
7 combinations thereof.